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the Targum explains *son of man* in verse 17 (Heb. verse 18) as the Messiah; the Targum has *mâlkâ mëshîhâ* for *ben* in verse 15 (Heb. verse 16). Nor does *the man at the right hand of JHVH* and *the son of man whom He has raised* refer to the Jews; the man whom the poet has in mind is the savior of the Jews, Judas Maccabæus.

I cannot discuss all the passages containing the term *son of man*. Additional details may be found in Cheyne-Black's *Encyclopædia Biblica*, but Prof. Nathaniel Schmidt's excellent article on the "Son of Man" (*op. cit.*, cols. 4705-4740) should be supplemented by Wellhausen's remarks in § 13 of his introduction to the first three Gospels (1911).³⁸ Wellhausen says he agrees now with Eerdmans, of Leyden, and Lietzmann, of Jena, in denying that Jesus called Himself the *son of man*. This does not mean that Jesus did not use the phrase for the pronoun of the first person, but that He did not employ the term to designate Himself as the Messiah. In several passages we find *the son of man* where the parallels have the pronoun of the first person (e. g., Mark viii. 38; Luke ix. 26 and Matt. x. 33; also Luke vi. 22 and Matt. v. 11).³⁹ The passages in the Gospels in which the term *son of man* has an apocalyptic meaning represent later additions. In the oldest portions of the Gospels, which were originally Aramaic, *son of man* simply denoted *man* or *some one*, and this could be used in certain connections for the first person. But the original meaning of the term *son of man*, or rather *son of a man*, was *gentleman*.⁴⁰

PAUL HAUPT.

BEHAVIORISM AND THE DEFINITION OF WORDS.

The propensity of philosophical studies to lead only to interminable arguments is one of the most striking features of the whole history of philosophy. Arguments are good, but only for the sake of conclusions; and unfortunately too many philosophical disputes lead to no results. The fact that so much discussion is rendered fruitless through lack of clearness in the definition of words, makes the study of language imperative. Before talking, take thought for the instruments of speech. This is as significant an injunction as the one that bids us inquire into our means of knowing before

³⁸ Cf. *ibid.*, pp. 70, 74, 81, 85.

³⁹ Cf. Wellhausen, *op. cit.*, p. 130.

⁴⁰ Cf. above, n. 13, and *Journal of the American Oriental Society*, Vol. 37. p. 14.

dogmatically building up systems of knowledge. If observance of this rule results in fewer words, no harm will be done. As Emerson has said, "Good as is discourse, silence is better, and shames it." If, on the other hand, greater precision of speech and thought result, the aim of the precept will have been attained.

A scientific study of words succeeds best if based upon behavioristic psychology. Speech is a form of behavior. It probably arose in the form of gestures, an obvious form of visible behavior, while vocal speech may at first have been the incidental accompaniment of gesture speech. However this may be, developed language consists of spoken and of written word-signs. Spoken words are the result of articulatory movements, and consist of sounds in the air; and written words consist of marks upon paper, or upon wood, stone, etc. When a man talks or writes, he is obviously *doing something*: he is then a proper object for the behaviorist to study. Speaking and writing are actual responses. The words are "response relics,"¹—the more or less permanent product of responses, like footprints on the sand.

Developed language is a complex system of signs. Each word is a sign, which expresses a meaning, and which usually refers to an object—which always refers to an object in such a theory as Meinong's *Gegenstandstheorie*,² according to which every name or word has an object, or denotation, though not, in all cases, either an existent object definable in terms of sense-data, or a subsistent universal. A word always refers at least to a situation, by virtue of which it may be defined.

The statement of a behavioristic view of language-signs will be facilitated by a discussion first of signs in general. For this I shall be indebted to Mr. C. S. Peirce, the giver of the term "pragmatism" to philosophy. His terminology, at least, is valuable. Mr. Peirce defines a sign as "anything which determines something else (its *interpretant*) to refer to an object to which itself refers (its *object*) in the same way, the interpretant becoming in turn a sign, and so on *ad infinitum*."³ For example, a present state of temperature, baro-

¹ I have borrowed this term from S. C. Pepper's doctor's thesis, *A Theory of Value in Terms of Stimulus and Response*, Harvard University, 1916.

² See A. Meinong, *Untersuchungen zur Gegenstandstheorie und Psychologie* (Leipsic, 1904), Ch. I.

³ J. M. Baldwin's *Dictionary of Philosophy and Psychology*, article "Sign" by C. S. Peirce. See also J. Royce, *The Problem of Christianity*, Vol. II, and V. F. Lenzen's doctor's thesis, *Outlines of a Science of Phenomenology*, Harvard University, 1916, for a further discussion of Mr. Peirce's theory of signs.

metric pressure, wind, and clouds is a sign of some specific future state of weather. The forecaster interprets the present condition of the atmosphere which is for him a sign. An example that is a clearer illustration of the definition is that of a man gazing up at a balloon. Other men interpret it thus, and gaze up similarly at the balloon. The first man determines others to refer to the same object to which he refers, the others, interpretants of the first sign, becoming signs in turn.

Mr. Peirce distinguishes icons, indices, and symbols. As the usual use of the words suggests, an icon resembles, an index points to, and a symbol has only an arbitrary connection with, the object denoted. Mr. Peirce employs the terms in a more precise sense, and not, in all cases, a wholly acceptable one. It is sufficient for our purposes to distinguish indices and icons, which do not, according to Mr. Peirce's definition, depend for their existence upon being interpreted as signs, and symbols, which depend upon interpretants for their existence, and which have only an arbitrary connection with the objects to which they are *made to refer* by the action of interpretants. An algebraic symbol, for example, neither resembles nor points to the object that it stands for. It has simply been taken by the mathematician to stand for some object, with which it has no inner or intrinsic connection. A guide-board is an example of an index, for it literally points to some object, though Mr. Peirce would not have accepted it as fulfilling the precise requirements of his definition of an index. Mr. Peirce's example of an index is a piece of mould with a bullet-hole in it as a sign of a shot. A photograph is an index with an iconic character. Mr. Peirce's example of a sign that is purely iconic is a lead-pencil streak as representing a geometrical line.

Accepting some of Mr. Peirce's terminology, and applying it to the behavioristic situation, we shall see that the behaving organism is the interpretant of signs, and that the relation of reference of a symbol to its object is established by specific response. Professor Holt's account⁴ of behavior in terms of specific response seems most adequate for explaining language as well as for explaining all other forms of behavior. According to Professor Holt's account, behavior is a process of release which is a function of factors outside of the organism released. The organism responds specifically to the external object. The response is released by

⁴ E. B. Holt, *The Freudian Wish*, Supplement, "Response and Cognition," pp. 153 et seqq.; also *The Concept of Consciousness*, Ch. IX.

a stimulus and is *to* an object removed from the stimulus, except in rare and simple cases where stimulus and object coincide, as in the case of the protozoa. Specific response proper is made possible by the integration of reflexes, so that systems of connected reflexes function together, allowing recession of the stimulus from the object with reference to which the behavior is explainable. Professor Holt illustrates the situation very concretely by the case of a hypothetical two-eyed, two-finned water animal. Here stimulation of the right eye releases a response of the left fin, and stimulation of the left eye releases a response of the right fin. Thus light from a single source will cause the animal to approach it directly, for both eyes will be stimulated equally when the median line of the animal becomes directed toward the light. The behavior is then released by the immediate stimulation of the two eyes, but is a constant function of the distant light. Such a case is, of course, a very simple one. Human behavior is tremendously complex. But there has been some degree of continuity in evolution, and the essential principles of human behavior can be seen exemplified in the behavior of the simpler organisms.

Professor Holt would extend this theory of specific response to the highly developed language responses.⁵ Words are symbols, lacking any intrinsic connection with their denotations. Thus the problem is to determine how words come to have a connection with their objects. According to Professor Holt's behavioristic scheme, a word is the stimulus that releases a response that is a function of the denotation of the word. It is organic response, consequently, that establishes the relation of reference of a word to its object. For example, the words, "Memorial Hall," for one to whom the words are in fact a sign of something, constitute the stimulus of a response that is a function of the Hall itself. An observer who had never heard of Memorial Hall, and to whom, consequently, the words were a sign of nothing, might discover the object of the sign by observing some one's behavior when the words were spoken—such behavior being an indexical interpretation of the words.

A word-sign, considered as a stimulus, differs from ordinary stimuli, since, being a symbol, it lacks any intrinsic connection with the object associated with it. It may seem circular to call a word a stimulus, and yet to say that the connection of a word with its denotation is constituted by organic response; for the definition of specific response seems to presuppose an original connection between

⁵ See *The Freudian Wish*, p. 110.

the stimulus and the object of response. Professor Watson's view⁶ is applicable here and solves the apparent difficulty. Professor Watson regards speech as a system of conditioned reflexes. That is, words become functional in habit systems so far as they become "substitutable for the stimulus which originally initiated an act."⁷ A conditioned reflex may be established by repeatedly presenting two stimuli simultaneously, one being a stimulus that releases a response because of innate or at least previously acquired synaptical connections, while the other stimulus has at the start no connection with the response in question, or perhaps with any definite response at all. After a time the second stimulus alone will come to release the response that was originally released only by the first stimulus.

Thus through a process of habit formation words become substitute stimuli. There develops a correspondence between language and more overt behavior. "Words have grown up around motor acts and have no functional significance apart from their connection with motor acts."⁸ Words probably first appeared in racial evolution through chance associations of sounds with overt behavior. They have come to be effective stimuli through association and substitution, being built up upon a basis of bodily habits. An external observer of behavior and of strange words cannot tell the denotation of the words until those individuals for whom the words have become substitute stimuli respond to the objects denoted by the words. Professor Watson exactly illustrates the view that specific response released by a word-stimulus is the indexical interpretant of the word, when he speaks of the case "where we hear a man tell us what acts he is going to perform on a horizontal bar and later see him executing those acts."⁹

As I have said above, we must keep in mind the distinction between a word regarded as a sign, which is a response relic, not behavior itself, and the *utterance* of a word. But, though the utterance of a word is actual behavior, it does not, however, guide us to the denotation of the word in cases where the word is unfamiliar. A further response, released by the word, is needed, and this response is an indexical interpretation of the word. The speech

⁶ J. B. Watson, "Behavior and the Concept of Mental Disease," *Journal of Philosophy, Psychology, and Scientific Methods*, Vol. XIII (1916), pp. 589 et seqq. See also Watson, *Behavior*, pp. 328 et seqq., and H. C. Brown, "Language and the Associative Reflex," *Jour. of Philos.*, Vol. XIII, pp. 645-49.

⁷ Watson, *loc. cit.*, (*Jour. of Philos.*), p. 591.

⁸ *Ibid.*, p. 591.

⁹ *Ibid.*, p. 591.

response, the utterance of a word or words, may be for the social purpose of calling another's attention to something, or of preparing a motor set in another person for something that is going to happen. For one who does not know the language in which the words are spoken, however, the vocal response does not indicate the objects referred to by the speaker, or prepare the desired motor set; but the foreigner can learn the denotation of the words by observing the behavior of others who possess the proper systems of habits so that the words are effective stimuli. Thus A says to B, who is about to leave the house, "It is raining." Thereupon B procures an umbrella, and raises it as he goes out of the house. The complex of symbols or response relics, "It is raining," has thereby been interpreted for any stranger to the English language, who may be present, by B's response. B's response is an indexical interpretant of the words, and points out the denotation of the words. The words, "It is raining," or "It is going to rain," as relics of response, and mere symbols, are exactly on a level with the weather-bureau flag that is displayed when rain is expected. The weather-bureau flag has no intrinsic connection with rain. The connection that it comes to have with rain it acquires through usage, that is through specific responses released by it, which are an indexical interpretation of the sign. Many words are spoken or written for the purpose of calling attention, as, for example, "Railroad crossing; look out for the engine"; "Clear the way"; "Beware the dog"; etc. In all such cases it is obvious that, for one who had never seen or heard the words before, the symbols would denote nothing at all until they had been interpreted.

The importance of such considerations in the case of definition is apparent. If by definition of a term we seek to tell what the term stands for, what it denotes, we see that the term intrinsically denotes nothing at all. To discover its acquired denotation we must observe the whole community of persons for whom the word is actually a sign. This community consists, with respect to the word in question, of indexical interpretants, and observation of such interpretants will disclose the denotation of the word. When we say that we must inquire of human usage to discover the definition of a word, we are recognizing that human usage is an indexical interpretant of the sign, and is the only guide to the denotation. If, on the other hand, we seek by definition to tell the *meaning*, as distinguished from the *denotation*, we must still seek for the denotation first as a

guide to the meaning. A word refers at least to an objective situation in which its meaning may be sought in cases where there is no existent denotation.

The case of seeking the definition of a word is precisely analogous to the case of a stranger to a language seeking for the denotation of a word through observing the responses that it releases. In defining words one should stand outside the problem, with no preconceptions of one's own, and observe what the word-symbol is actually a sign of in human behavior. The definer can discover the class of objects to which the word refers by observing for what responses the word has become a stimulus, and then observing what class of objects such responses are a function of.

We may illustrate the part that human usage plays in establishing the meaning of words by referring to the original fixing of names to objects in the growth of language, speaking, for the sake of concreteness, in terms of an incident recorded in Hebrew mythology. When Adam confronted an animal kingdom of unnamed species, the cat became a cat when he called it a cat, and in like manner the dog became a dog. "Whatsoever Adam called every living creature, that was the name thereof." Adam did not create the animals, but he did create their names, and established the relations of reference that were involved. Adam did not *judge* that this animal was a cat, that, a dog; for there was no chance of his being in error. He created the symbols (the names of the animals) and arbitrarily determined what the symbols should denote. I have spoken figuratively, but for Adam substitute the whole human community; for the animal kingdom substitute the entire world of objects; and for the creation of language all at once at a definite time in history substitute a gradual evolution; and the same principle of convention, or usage, is seen to be involved. Though it has been recognized since the time of Aristotle that convention establishes the denotation and consequently the meaning of words, too little account is usually taken of convention by philosophers when the definition of words is in question. Though Aristotle pointed out that convention establishes the reference of words to their objects, it has remained for behaviorism to give a definite description of what convention means in this connection. It means simply that specific responses are indexical interpretants of word-symbols.

The subject of definition cannot be concluded without further reference to the difference between meaning and denotation. I

have already distinguished these concepts. "The round square," for example, is a group of words possessing meaning, but no denotation, except for such a view as Meinong's—that there are objects of which it is true that they are not. The meaning of a word or descriptive phrase consists of a universal or of a complex of universals. Each constituent of the descriptive phrase, "the round square," for example, contains a universal, and the complex of universals constitutes the meaning of the phrase. Each constituent of the phrase also has a denotation, whether or not the phrase as a whole has one. The meaning is the connotation of the word, or the definition in intension, while the denotation is the definition in extension. If by definition proper we seek the meaning, or intension, of a word rather than the denotation, an inductive, empirical method of definition will consist in collecting instances of the objects which, by convention or common usage, the word denotes, and then in seeking in these cases for the universal element by virtue of which they are constituted a class. Specific response is a function of the class of objects that a word denotes, and is hence a guide to the solution of the problem of the meaning of the word.

It might be said in criticism, by pragmatists, for example, that such an account of meaning leaves out the dynamic aspect and the future reference involved in it. The dynamic factor is supplied, however, by the responding organism, and is not found in the stimulus itself. The meaning that attaches to a word-sign is not itself dynamic.

The way of procedure above indicated in seeking the meaning of words, that is, the observation of behavior that is centered around the words, and of responses released by the words—a procedure based upon a behavioristic theory of how words acquire meaning—is not unlike Dewey's view, for Dewey says,¹⁰ "In the case of the meaning of words, we see readily that it is by making sounds and noting the results which follow, by listening to the sounds of others and watching the activities which accompany them, that a given sound finally becomes the stable bearer of a meaning."

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¹⁰ John Dewey, *How We Think*, pp. 124 et seq.